

## WHAT IS CLAIMED IS:

1. A method of processing a database service query, comprising:
  - receiving a service query, including a filter having one or more filter items;
  - expanding the filter; and
- 5 applying a condition test to each filter item to determine if the filter item includes a NOT connective and if the filter item is one of two types of filter items.
- 10 2. The method as claimed in claim 1, wherein the two types of filter items comprise a type only filter item and a type and value filter item.
- 15 3. The method as claimed in claim 2, wherein a logical methodology is applied to evaluate NOT connectives associated with type only filter items.
4. The method as claimed in claim 3, wherein the logical methodology comprises a subtraction method.
5. The method as claimed in claim 2, wherein a NOT connective associated with a type and value filter item is pushed inside the filter item, resulting in changing an operator inside the filter item.
- 20 6. The method as claimed in claim 1, wherein the condition test further includes determining if each filter item can be pre-evaluated to true.

7. The method as claimed in claim 1, wherein the condition test further includes determining if each filter item can be pre-evaluated to false, such that the expanded term can be ignored.

5 8. The method as claimed in claim 1, wherein the filter is expanded to a minimum set of terms.

9. A directory services arrangement comprising:

a plurality of tables, each table having a plurality of rows and columns storing

10 arbitrary data in a search service, wherein at least one of the tables is has information used to resolve filters having at least one filter item;

means for expanding each filter into an expanded term; and

condition test means for determining whether each filter item includes a NOT

connective and whether each filter item is one of two types of filter items.

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10. The directory services arrangement as claimed in claim 9, wherein the two types of filter items comprise a type only filter item and a type and value filter item.

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11. The directory services arrangement method as claimed in claim 10, wherein a logical methodology is applied to evaluate NOT connectives associated with type only filter items.

12. The directory services arrangement as claimed in claim 11, wherein the logical methodology comprises a subtraction method.

13. The directory services arrangement as claimed in claim 10, wherein a  
5 NOT connective associated with a type and value filter item is pushed inside the filter item resulting in changing an operator inside the filter item.

14. The directory services arrangement as claimed in claim 9, wherein the  
condition test means further determines if each filter item can be pre-evaluated to be  
10 true.

15. The directory services arrangement as claimed in claim 9, wherein the  
condition test means further determines if each filter item can be pre-evaluated to be  
false, such that the expanded term can be ignored.

16. The directory services arrangement as claimed in claim 9, wherein the  
condition test means further determines if each filter item can be pre-evaluated to be  
true, but is inverted by a NOT connective, such that the expanded term can be  
ignored.

17. A method of processing a database service query, comprising:  
receiving a service query;  
applying a filter to the service query resulting in zero or more filter items; and  
applying a condition test to each filter item to determine a form of the filter  
5 item.

18. The method as claimed in claim 17, wherein the condition test  
determines if the filter item is a type only filter item.

10 19. The method as claimed in claim 18, further comprising evaluating the  
filter item in accordance with a logical methodology if the filter item is type only form.

15 20. The method as claimed in claim 19, wherein the logical methodology  
comprises a subtraction method.

21. The method as claimed in claim 20, wherein the subtraction method  
includes the use of an ANSI SQL “except” clause.

22. The method as claimed in claim 20, wherein the subtraction method  
20 transforms each filter item to a form that contains fewer or no NOT connectives.

23. The method as claimed in claim 17, wherein the condition test determines if the filter item is a type and value filter item.

24. The method as claimed in claim 23, wherein if the filter item is a type 5 and value form, adding SQL representing the filter item to an expression to be evaluated, which may involve at least one table join.

25. The method as claimed in claim 23, wherein if the filter item is an inverse of the type and value filter item, pushing the NOT connective inside the filter 10 item.

26. The method as claimed in claim 25, further comprising applying the pushed NOT connective to an operator.

15 27. The method as claimed in claim 26, wherein the step of applying the pushed NOT is effected by inverting the operator.

28. A directory services arrangement comprising:  
a plurality of tables, each table having a plurality of rows and columns, and  
20 storing arbitrary data, wherein at least one of the tables has information used to resolve filters in a search service; and

a condition tester that determines whether a filter item is a type only filter item or a type and value filter item.

29. A computer program product including:

5 a computer usable medium having computer readable program code embodied on said medium, wherein the computer readable program code is for applying a condition test to each filter item of a filter to determine if the filter item is type only filter item or type and value filter item, and wherein the filter is adapted for interaction with a search service of a directory services arrangement.

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